Small Business Innovation Research/Small Business Tech Transfer

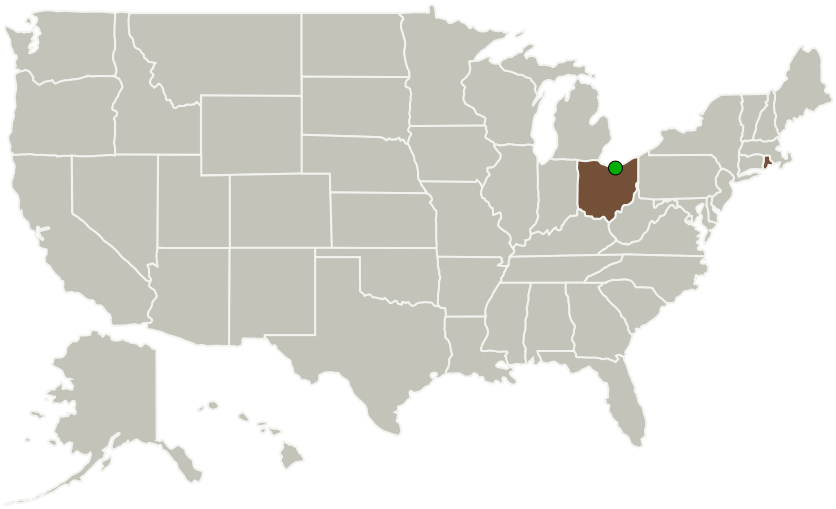
Advancing High Energy Lithium-Sulfur Batteries, Phase I

Completed Technology Project (2014 - 2014)

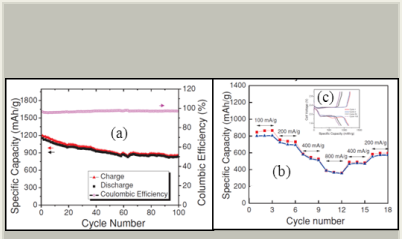
Project Introduction

Lithium-Ion batteries have been a main source of energy for many aerospace applications over the past decade. Future space missions are facing a number of challenging requirements, including significant increase in specific energy, approaching 500 Wh/kg, and energy density of 700 Wh/l at cell level. Compared to state-of-the-art technology today, a reduction in mass and volume are necessary, along with improvements for functioning in harsh space environments and an increase in reliability. Yardney Technical Products, Inc., a world leader in cutting-edge battery technology, in collaboration with Purdue University, proposes developing lithium-sulfur battery technology. This will have a cathode based on a novel, sulfur mesoporous carbon composite. In addition, the proposed Phase I research will include lithium dendrite suppressive electrolyte for a significant improvement in safety.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Yardney Technical Products, Inc.	Lead Organization	Industry	East Greenwich, Rhode Island
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



Advancing High Energy Lithium-Sulfur Batteries Project Image

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Primary U.S. Work Locations	
Ohio	Rhode Island

Project Transitions

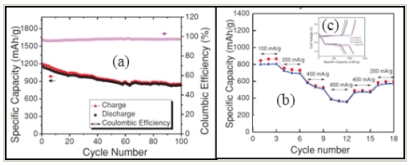
June 2014: Project Start

December 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137553)*

Images



Project Image
Advancing High Energy Lithium-Sulfur Batteries Project Image *(https://techport.nasa.gov/image/129339)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Yardney Technical Products, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

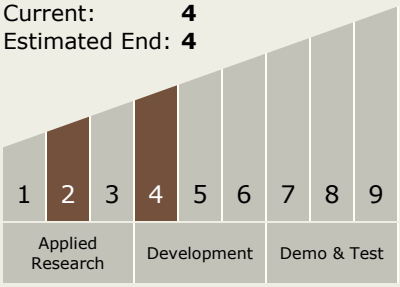
Carlos Torrez

Principal Investigator:

Joseph Gnanaraj

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System